What is Claimed is:

1. A non-sintered type thin electrode for batteries comprising powders containing mainly active material powder or pseudo-active material powder is filled into or coated on a conductive electrode substrate of a thin electrolyte-proof metal foil having a three dimensional structure, wherein said conductive electrode substrate:

(a) has innumerable hollow concave and convex parts;

(b) is of three dimensional form with said concave and convex parts, whereby said metal foil has a thickness is close to that of the electrode;

(c) has the following concave and convex parts or groups thereof

the number of concave parts is not less than half the number of concave and convex parts, wherein the said concave and convex parts are adjacent and closest to a convex part,

the number of groups of concave parts is not less than half the number of groups of concave and convex parts, wherein the said groups of concave and convex parts are adjacent and closest to groups of convex parts,

the number of convex parts is not less than half the number of concave and convex parts, wherein the said concave and convex parts are adjacent and closest to a concave part, and

the number of groups of convex parts is not less than half the number of groups of concave and convex parts, wherein the said concave and convex parts are adjacent and closest to groups of concave parts; and

(d) the walls of said concave and convex parts are contoured in the direction of the thickness of said conductive electrode substrate and are tilted in one direction in an increasing amount according to the closeness to the edges of the concave and convex

parts.

2. The non-sintered type thin electrode for batteries according to Claims 1, wherein a metal is a main component of said conductive electrode substrate of which a major part of the surface is a coarse surface which has innumerable number of microscopic concavities and convexities

3. The non-sintered type thin electrode for batteries according to Claims 1, wherein nickel is a main component of said conductive electrode substrate and materials of at least one selected from a group consisting of cobalt, calcium, titanium, silver, yttrium, lanthanide, carbon and oxides of these are arranged on the major part of the surface.

4. A non-sintered type thin electrode for batteries according to Claim 1, wherein, in the vicinity of the edges of said concave and convex parts in said conductive electrode substrate, the closer to the edge the thinner the edges become and at least half or more of the number of edges have holes.

5. A non-sintered type thin electrode for batteries according to claim 1, wherein the concave and convex parts are arranged in alternating columns of plural concave parts or groups of convex parts and columns of plural concave parts or groups of convex parts , wherein the columns are arranged substantially in parallel and define an angle of about 30 to 60 degrees with respect to a longitudinal direction of the electrode.

6. A non-sintered type thin electrode for batteries according to Claim 1 characterized in that individual concave and convex shapes of said concave and convex parts are a hollow cone, triangular pyramid, quadrangular pyramid, hexagonal pyramid or octagonal pyramid.

7. A non-sintered type thin electrode for batteries according to Claim 1, wherein the edges of the convex and concave parts tilted in one direction in said conductive electrode substrate are contoured so as to enclose gaps between neighboring convex parts or

concave parts, respectively.

8. A non-sintered type thin electrode for batteries according to Claim 1, wherein the surfaces of the electrode are covered with an electrolyte-proof fine powder of synthetic resin.

9. The non-sintered type thin electrode for batteries according to Claim 1, wherein an inclination in one direction of the concave and convex parts of the conductive electrode body is approximately perpendicular to the direction of a spiral when said electrode is formed in a spiral shape.

10. A non-sintered type thin electrode for batteries wherein powders containing mainly active material powder or pseudo-active material powder are filled into or coated on a conductive electrode substrate of a thin electrolyte-proof metal foil having a three dimensional structure including innumerable concave and convex parts, wherein a distance between a majority of said powders and a closest part of said conductive electrode substrate is maintained within 150 μ m.

11. Process for producing a non-sintered type thin electrode for batteries, which comprises the steps of :

filling into or coating on conductive electrode substrate in a wide belt-like form with the paste of powders that contain mainly active material or pseudo-active materials;

pressing the filled or coated conductive electrode substrate between a pair of rollers; and

cutting into a desirable size ; wherein

(a) the conductive electrode substrate has an unevenness produced on the conductive electrode substrate by unevenness processing except for a part which remains even with a desirable width at least on both sides along the longitudinal direction,

(b) the conductive electrode substrate has innumerable hollow concave and convex parts formed by the unevenness processing,

(c) the thickness of the conductive electrode substrate which made a thin electrolyte-proof metal plate into three dimensional with said concave and convex parts is 0.5 to 2.0 times as large as the thickness of the final electrode, and

(d) the number of concave parts is not less than half the number of concave and convex parts, wherein the said concave and convex parts are adjacent and closest to a convex part,

the number of groups of concave parts is not less than half the number of groups of concave and convex parts, wherein the said groups of concave and convex parts are adjacent and closest to groups of convex parts,

the number of convex parts is not less than half the number of concave and convex parts, wherein the said concave and convex parts are adjacent and closest to a concave part, and

the number of groups of convex parts is not less than half the number of groups of concave and convex parts, wherein the said concave and convex parts are adjacent and closest to groups of concave parts.

12. Process for producing a non-sintered type thin electrode for batteries according to Claim 11, wherein said conductive electrode substrate:

is processed to produce said unevenness by means of

pressing between dies in which the upper and the lower dies are formed to have the same unevenness so as to engage with each other ,

pressing between rollers in which the upper and the lower rollers are formed to have the same unevenness so as to engage with each other, or

depositing nickel with the electrolytic nickel deposition method; and

is provided with alternating columns of numerous concave parts or concave part groups and columns of numerous convex parts or convex part groups which are substantially in

parallel and spaced at a constant interval while making an angle in a range of about 30 to 60 degrees with respect to longitudinal direction of the substrate.

13. Process for producing a non-sintered type thin electrode for batteries according to Claim 12,wherein said conductive electrode substrate employed to form the non-sintered type thin electrode is roll pressed and contoured in one direction in the vicinity of both surfaces of the said conductive electrode substrate.

14. Process for producing a non-sintered type thin electrode for batteries according to Claim 11, wherein the formation process applies a rolling press operation at least twice, wherein a first rolling press operates at a relatively high speed and with low pressure in an opposite rolling direction to the direction in which the electrode proceeds while a second press operates between rollers with larger diameters than those of the first rolling press at a lower speed than the first rolling press and with higher pressure than the first rolling press in the same direction that the electrode proceeds.

15. Process for producing a non-sintered thin electrode for batteries according to Claim 11,wherein the process comprises the step of;

pressing slightly by rubbing the surfaces of the conductive electrode between a slit with a brush, while being filled in or coated on with active material or pseudo-active material , before pressing the filled or coated conductive electrode substrate between a pair of rollers.

16. Process for producing a non-sintered thin electrode for batteries according to Claim 11 ,wherein after being cut into a desirable size, the said electrode is immersed in a liquid wherein a fine powder of synthetic resin is dispersed or the same liquid is sprayed onto the surfaces of said electrode so that said electrode is thinly coated with the fine powder of said synthetic resin.

17. Process for producing a non-sintered thin electrode for batteries according to Claim

16, wherein said synthetic resin is any of fluoride resin, polyolefin,polyvinyl-type and polysulfone resin powders or copolymers of which the main material is the above resins.

18. A secondary battery wherein electrodes, at least one thin electrode obtained by filling or coating a powder of which a main component is active material powders or pseudo-active material powders to the conductive electrode substrate which has a three dimensional structure and an opposite electrode with separator are sealed in a battery case, wherein:

(a) the conductive electrode substrate has an innumerable number of hallow concave and convex parts;

(b) a thickness of the conductive electrode substrate, made of a metal foil with electrolyte-proof resistance properties in a three dimensional form with said concave and convex parts, is nearly the same as the thickness of the final electrode;

(c) the number of concave parts is not less than half the number of concave and convex parts, wherein the said concave and convex parts are adjacent and closest to a convex part,

the number of groups of concave parts is not less than half the number of groups of concave and convex parts, wherein the said groups of concave and convex parts are adjacent and closest to groups of convex parts,

the number of convex parts is not less than half the number of concave and convex parts, wherein the said concave and convex parts are adjacent and closest to a concave part, and

the number of groups of convex parts is not less than half the number of groups of concave and convex parts, wherein the said concave and convex parts are adjacent and closest to groups of concave parts; and

(d) the walls of said concave and convex parts bend in the direction of the

thickness of said conductive electrode substrate so as to incline to a greater extent in one direction in relation to proximity to the edges of the concave and convex parts.

19. The secondary battery according to Claim 18, wherein said battery case has a bottom whose thickness (t_2) can withstand welding and a ratio (t_1/t_2) of the thickness (t_2) of the bottom to a thickness (t_1) of the side walls is 1.5 or more.

20. The secondary battery according to Claim 19, wherein a thicker part is provided inside of the battery case along the border between the wall surface and the bottom in said battery case.

21. The secondary battery according to Claim 19, wherein a positive terminal of an adjoining secondary battery is welded directly, or via a metal connector, to the bottom of said battery case.